* NOTICES *

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3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1]In a host controller which connects a SDIO card which is provided with two or more card slots of a SDIO standard, and chooses one card slot equipped with a SDIO card, and with which a selected card slot is equipped, and a host CPU, When said two or more card slots are equipped with at least two or more SDIO cards, A SDIO host controller possessing an interruption detection means to detect an interrupt signal generated from a SDIO card with which a card slot of non selection is equipped, and to notify to said host CPU.
[Claim 2]The SDIO host controller according to claim 1, wherein said interruption detection means possesses a mask means which carries out the mask of the interrupt signal generated from said SDIO card individually by said card slot correspondence.
[Claim 3]The SDIO host controller according to claim 2 if said mask means is satisfied [conditions set up beforehand], wherein it will perform a mask or mask releasing for said interrupt signal individually by said card slot correspondence.
[Claim 4]If an interrupt signal which made a SDIO card with which a card slot of said non selection was equipped a standby mode of power saving and with which said interruption detection means was generated from a SDIO card of said standby mode is detected, The SDIO host controller possessing a power consumption control means which returns the SDIO card concerned to the usual power consumption mode according to claim 1 or 2.
[Claim 5]Said interruption detection means, An AND circuit which takes a logical product with a control signal which shows whether a low-level signal which a SDIO card with which said SDIO card slot was equipped outputs on a SDIO bus as an interrupt signal, and said SDIO card slot are equipped with a SDIO card, The SDIO host controller according to any one of claims 1 to 4 having more than one by said SDIO card slot correspondence.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the SDIO host controller which is an interface with the host CPU which starts electronic equipment provided with two or more SDIO card slots, especially a SDIO card and said electronic equipment have.

[0002]

[Description of the Prior Art]Before, electronic equipment provided with two or more SDIO card slots which are the buses of an SD memory card or an IO card is developed. An SD memory card is a card shape memory which can store data with various image pick data, digital sound data, etc. of a digital camera. For example, editing processing etc. can be performed by equipping the SDIO card slot with which the personal computer was equipped with the SD memory card which stored the image pick data of the digital camera, and reading the image pick data stored in a computer.

[0003]Drawing 3 is a block diagram showing the example of composition of the conventional SDIO host controller. Suppose that the card slot 2a of the SDIO standard with which the SDIO host controller 1 is equipped was first equipped with SD memory card (card device) 101, for example. In that case, the host CPU 4 in which the host controller concerned is carried controls the bus selection control circuit 11 via PCI bus 50, the connector 3 of a PCI standard, I/O register 15, and the control logic 14, and chooses the card slot 2a. Namely, the control logic 14 switches the selector 12 for control signals, and the selector 13 for data, connects the card slot 2a to the control logic 14, and it carries out connection release from the control logic 14 by making card slot 2b into non selection.

[0004]Thereby, the host CPU 4 starts service to SD memory card 101 inserted in the card slot 2a via PCI bus 50, the connector 3 of a PCI standard, and I/O register 15. Then, even if IO card 102 was inserted in card slot 2b and this IO card 102 generated interruption, there was no

course which transmits this to the host CPU 4.

[0005]Even when the card slot 2a of two or more above SDIO standards, two or more card slots [apparatus / provided with two or more 2bs] 2a, and 2b are equipped with the card devices 101 and 102, respectively, there is always one SD memory card which can serve the host CPU 4 by the side of apparatus. It is because it is not assumed that the SD memory card in which the card slot of non selection was equipped with the reason on the character of SD memory cards 101 and 102 takes out interruption to the host CPU 4 etc.

[0006]

[Problem(s) to be Solved by the Invention]By however, apparatus provided with the card slot 2a of the above SDIO standards, and 2b. When it is equipped with two or more SD memory cards and IO cards which contain the IO card of at least one sheet in two or more SDIO card slots and is, When SD memory card 101 has received service by the host CPU 4, it arises that IO card 102 with which card slot 2b of non selection is equipped carries out reception etc. by the interface function of Bluetooth, and takes out interruption to the host CPU 4.

[0007]Conventionally a SDIO host controller However, the SDIO card slot 2a, The standard of the card device (general terms, such as an SD memory card, an IO card, and a SOIO card) with which 2b is equipped is carried out the premise [the memory card which does not generate interruption etc. at the time of non selection], and use of the card device which has the above wireless communication functions was not assumed. So, even if the interrupt of the card device occurred from card slot 2b of non selection in the above-mentioned conventional example since it was not assumed that interruption enters simultaneously from two or more card devices namely, there was no means to notify this to the host CPU 4. For this reason, even if the card device of non selection issued urgent interruption, interruption services were not promptly received by the host CPU 4, but there was a serious problem that the response of a device worsened.

[0008]Were made in order that this invention might solve the conventional technical problem like ****, and the purpose, When an interrupt occurs from the card device with which the card slot of non selection is equipped, It is providing the SDIO host controller which can perform immediately the interruption services to all the card devices which can notify this interruption to a host CPU promptly, and with which it is equipped if necessary.

[0009]

[Means for Solving the Problem]To achieve the above objects, the 1st means is provided with two or more card slots of a SDIO standard, and one card slot equipped with a SDIO card is chosen, In a host controller which connects a SDIO card with which a selected card slot is equipped, and a host CPU, When said two or more card slots are equipped with at least two or more SDIO cards, an interruption detection means to detect an interrupt signal generated from a SDIO card with which a card slot of non selection is equipped, and to notify to said host CPU

is provided.

[0010]This invention is apparatus provided with two or more SDIO card slots, and when interruption enters from a card device with which a card slot of non selection was equipped, it is provided with a means to notify card device interruption of non selection to a host CPU of said apparatus.

[0011]

[Embodiment of the Invention]Hereafter, the embodiment of this invention is described based on a drawing. Drawing 1 is a block diagram showing the composition concerning a 1st embodiment of the SDIO host controller of this invention. However, identical codes are attached and explained to the same portion as a conventional example.

[0012]The card slot 2a to which the SDIO host controller 1 is equipped with a SDIO card, The host CPU 4 of electronic equipment in which 2b and the host controller concerned are carried PCI bus 50 when it passes and the connector 3 of a PCI standard which connects, and the card device of non selection issue interruption, The non selection card interrupt control circuits 5, the card slot 2a which perform control which transmits this to the host CPU 4, A control signal is supplied to the bus selection circuit 11 and the non selection card interrupt control circuits 5 which choose one bus of the 2bs, The format conversion function for which serial parallel conversion etc. carry out the data from [from the bus selection circuit 11] the SDIO card outputted, The data outputted from the control logic 14 provided with I/O register control, a host interface function, an interrupt control function, etc. and the control logic 14 is once held, and it has I/O register 15 accessed by the host CPU 4.

[0013]The non selection card interrupt control circuits 5, The output of AND circuits 51 and 52 and AND circuits 51 and 52. It flows through NOR circuit 57 and AND circuits 55 and 56 which take the NOR of the output of AND circuits 55 and 56 for carrying out the mask of the output of the flip-flops (F/F) 53 and 54 and the flip-flops (F/F) 53 and 54 to latch, and AND circuits 55 and 56, It has the interrupt mask circuit 58 which intercepts and carries out mask operation.

[0014]Next, operation of this embodiment is explained. First, if the card slot 2a of the SDIO host controller 1 and 2b are equipped with the SDIO cards (SDIO CARD) 103 and 104, If it detects having been equipped with the xsell signal by "0" at card slot 2b when it detected that the card slot 2a was equipped with the SDIO card 103, control logic 14 will be set to "1" and will be outputted to AND circuits 51 and 52. In order that it can come, simultaneously the bus selection circuit 11 of the SDIO host controller 1 may choose one of card slots, the host CPU 4 starts the service to the SDIO card with which the selected card slot is equipped. It is made not to detect detection of the interrupt signal of a slot with selected AND circuits 51 and 52 in a non selection card interrupt control circuit. Card interruption of a selection slot is processed by the control logic 14 as usual.

[0015]Here, card slot 2b shall be chosen by the bus selection circuit 11, and service to the

SDIO card 104 shall be offered by the host CPU 4. When the SDIO card 104 is a memory device at that time, it passes along the bus selection circuit 11, and a format is changed by the control logic 14, and the data read from the SDIO card 104 is inputted into I/O register 15, and is held. The host CPU 4 accesses I/O register 15 via PCI bus 50 and the connector 3, and reads the data currently held.

[0016]In the above situations, the SDIO card 103 with which the card slot 2a of non selection was equipped In for example, the case as it has a bluetooth function and the communication start signal was received. That card interruption should be notified to the host CPU 4, d1 signal in a 4-bit data signal (d0-d3) is made into a low level ("0") by SD bus, and it outputs to AND circuit 52 of the non selection card interrupt control circuits 5.

[0017]Thereby, since the output of AND circuit 52 is set to high level ("1"), the flip-flop 54 latches this. "1" latched by the flip-flop 54 is inputted into AND circuit 56. Usually, since the interrupt mask circuit 58 has canceled the mask and it supplies high level (xmask "1") to AND circuits 55 and 56, AND circuit 56 is ****(ed), outputs "1", this boils NOR circuit 57, and is set more to a low level ("0"), and is outputted to the connector 3. Since this "0" signal is inputted into the host CPU 4 via the interrupt control logic in the control logic 14, the host CPU 4 can know that the SDIO card 103 issued interruption.

[0018]If the host CPU 4 gets to know this interruption, after clearing the flip-flop 54, Investigate the priority etc. of the card slot 2a set up beforehand and 2b, and for example, when the priority of the card slot 2a is high, Via PCI bus 50, the connector 3, I/O register 15, and the control logic 14, the bus selection circuit 11 is controlled, a selection card slot is used as the card slot 2a, and the service to the SDIO card 103 is started by making a non selection card slot into card slot 2b. In this way, the host CPU 4 inputs the data which the SDIO card 103 received via the bus selection circuit 11, the control logic 14, I/O register 15, the connector 3, and PCI bus 50, and starts communication by the SDIO card 103.

[0019]Since these do not generate interruption, for example when the card slot 2a and the SDIO cards 103 and 104 with which 2b was equipped are memory devices, the interrupt mask circuit 58 is the purpose of preventing a misbelief item, A mask is carried out and it can avoid transmitting an interrupt signal to the host CPU 4 by outputting a low level (xmask "0") to AND circuits 55 and 56.

[0020]Or a low level (xmask "0") is outputted only to the AND circuit by the side of the SDIO card of a memory device, and it can avoid outputting an interrupt signal from the SDIO card of a memory device. Also when using the application which uses neither the fault degree hour of a power up, nor interruption, AND circuits 55 and 56 are intercepted by the interrupt mask circuit 58, and the mask of the interrupt signal is carried out.

[0021]According to this embodiment, the interrupt signal generated from the SDIO card 103 with which the card slot 2a of non selection was equipped can be transmitted to the host CPU

4 through the non selection card interrupt control circuits 5. Thereby, to the card slot 2a and all the SDIO cards 103 and 104 with which 2b was equipped, if the host CPU 4 has necessity, it can start service promptly and the response performance of a system can raise it.

[0022]Beforehand the time of predetermined conditions, for example, the state of excess at the time of a power turn, etc. by the interrupt mask circuit 58 The SDIO card 103. Or the application software which can carry out the mask of the detection of the interrupt signal from 104, and can lose malfunction, and does not use interruption can be used.

[0023]Drawing 2 is a block diagram showing the composition concerning a 2nd embodiment of the SDIO host controller of this invention. Although the composition of this example is the same as that of a 1st embodiment shown in drawing 1 almost, it is the point that the places which have a function which controls freely the level of the card slot 2a and the consumption power supply over the SDIO cards 103 and 104 with which 2b was equipped according to a situation differ.

[0024]In order to realize this function, a power supply is supplied to the SDIO cards 103 and 104. The power supply circuit 6, the SDIO card 103, or the interruption detection circuit 7 that detects the interrupt signal which 104 took out is formed.

[0025]Next, operation of this embodiment is explained. A power up and the host CPU 4 control the power supply circuit 6 via PCI bus 50, the connector 3, I/O register 15, and the control logic 14, supply the power supply of 3.3V of the normal mode to the SDIO cards 103 and 104, and perform initial setting.

[0026]For example the host CPU 4 chooses card slot 2b, and it controls the power supply circuit 6, supplies the SDIO card 104 which had the power supply 3.3V of the normal mode chosen, and supplies the power supply of the standby mode of 1.5V to the SDIO card 103 of non selection.

[0027]Then, by the same operation as the embodiment shown in drawing 1, if the SDIO card 103 of non selection takes out an interrupt signal, since the output of AND circuit 56 becomes high-level, the interruption detection circuit 7 will detect that the SDIO card 103 issued interruption, and will tell the power supply circuit 6 about this. If it gets to know that the SDIO card 103 issued interruption, the power supply circuit 6 will supply the power supply 3.3V of the normal mode to the SDIO card 103, and will enable it to perform various operations.

[0028]According to this embodiment, when the power supply of only a standby mode which can take out an interrupt signal etc. is supplied to the SDIO card of non selection and an interrupt signal is taken out to this card, power-saving can be attained as the power supply of the normal mode is supplied promptly. There is effect that other operations are the same as that of a 1st embodiment shown in drawing 1 and same.

[0029]In the range which does not deviate from the gist without limiting this invention to the above-mentioned embodiment, In concrete composition, a function, an operation, and an

effect, the same effect can be acquired with the application of this invention also in the electronic equipment which can carry out according to other various gestalten, for example, has three or more card slots.

[0030]

[Effect of the Invention]As explained to details above, according to the SDIO host controller of this invention. When an interrupt occurs from the card device with which the card slot of non selection is equipped, This interruption can be promptly notified to a host CPU, the interruption services to all the card devices with which the card slot is equipped can be immediately performed if necessary, and the response performance of a system can be raised.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention]This invention relates to the SDIO host controller which is an interface with the host CPU which starts electronic equipment provided with two or more SDIO card slots, especially a SDIO card and said electronic equipment have.

[Translation done.]

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PRIOR ART

[Description of the Prior Art]Before, electronic equipment provided with two or more SDIO card slots which are the buses of an SD memory card or an IO card is developed. An SD memory card is a card shape memory which can store data with various image pick data, digital sound data, etc. of a digital camera. For example, editing processing etc. can be performed by equipping the SDIO card slot with which the personal computer was equipped with the SD memory card which stored the image pick data of the digital camera, and reading the image pick data stored in a computer.
[0003]Drawing 3 is a block diagram showing the example of composition of the conventional SDIO host controller. Suppose that the card slot 2a of the SDIO standard with which the SDIO host controller 1 is equipped was first equipped with SD memory card (card device) 101, for example. In that case, the host CPU 4 in which the host controller concerned is carried controls the bus selection control circuit 11 via PCI bus 50, the connector 3 of a PCI standard, I/O register 15, and the control logic 14, and chooses the card slot 2a. Namely, the control logic 14 switches the selector 12 for control signals, and the selector 13 for data, connects the card slot 2a to the control logic 14, and it carries out connection release from the control logic 14 by making card slot 2b into non selection.
[0004]Thereby, the host CPU 4 starts service to SD memory card 101 inserted in the card slot 2a via PCI bus 50, the connector 3 of a PCI standard, and I/O register 15. Then, even if IO card 102 was inserted in card slot 2b and this IO card 102 generated interruption, there was no course which transmits this to the host CPU 4.
[0005]Even when the card slot 2a of two or more above SDIO standards, two or more card slots [apparatus / provided with two or more 2bs] 2a, and 2b are equipped with the card devices 101 and 102, respectively, there is always one SD memory card which can serve the host CPU 4 by the side of apparatus. It is because it is not assumed that the SD memory card in which the card slot of non selection was equipped with the reason on the character of SD

memory cards 101 and 102 takes out interruption to the host CPU 4 etc.

[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention]As explained to details above, according to the SDIO host controller of this invention. When an interrupt occurs from the card device with which the card slot of non selection is equipped, This interruption can be promptly notified to a host CPU, the interruption services to all the card devices with which the card slot is equipped can be immediately performed if necessary, and the response performance of a system can be raised.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]By however, apparatus provided with the card slot 2a of the above SDIO standards, and 2b. When it is equipped with two or more SD memory cards and IO cards which contain the IO card of at least one sheet in two or more SDIO card slots and is, When SD memory card 101 has received service by the host CPU 4, it arises that IO card 102 with which card slot 2b of non selection is equipped carries out reception etc. by the interface function of Bluetooth, and takes out interruption to the host CPU 4.
[0007]Conventionally a SDIO host controller However, the SDIO card slot 2a, The standard of the card device (general terms, such as an SD memory card, an IO card, and a SOIO card) with which 2b is equipped is carried out the premise [the memory card which does not generate interruption etc. at the time of non selection], and use of the card device which has the above wireless communication functions was not assumed. So, even if the interrupt of the card device occurred from card slot 2b of non selection in the above-mentioned conventional example since it was not assumed that interruption enters simultaneously from two or more card devices namely, there was no means to notify this to the host CPU 4. For this reason, even if the card device of non selection issued urgent interruption, interruption services were not promptly received by the host CPU 4, but there was a serious problem that the response of a device worsened.
[0008]Were made in order that this invention might solve the conventional technical problem like ****, and the purpose, When an interrupt occurs from the card device with which the card slot of non selection is equipped, It is providing the SDIO host controller which can perform immediately the interruption services to all the card devices which can notify this interruption to a host CPU promptly, and with which it is equipped if necessary.

[Translation done.]

MEANS

[Means for Solving the Problem]To achieve the above objects, the 1st means is provided with two or more card slots of a SDIO standard, and one card slot equipped with a SDIO card is chosen, In a host controller which connects a SDIO card with which a selected card slot is equipped, and a host CPU, When said two or more card slots are equipped with at least two or more SDIO cards, an interruption detection means to detect an interrupt signal generated from a SDIO card with which a card slot of non selection is equipped, and to notify to said host CPU is provided.

[0010]This invention is apparatus provided with two or more SDIO card slots, and when interruption enters from a card device with which a card slot of non selection was equipped, it is provided with a means to notify card device interruption of non selection to a host CPU of said apparatus.

[0011]

[Embodiment of the Invention]Hereafter, the embodiment of this invention is described based on a drawing. Drawing 1 is a block diagram showing the composition concerning a 1st embodiment of the SDIO host controller of this invention. However, identical codes are attached and explained to the same portion as a conventional example.

[0012]The card slot 2a to which the SDIO host controller 1 is equipped with a SDIO card, The host CPU 4 of electronic equipment in which 2b and the host controller concerned are carried PCI bus 50 when it passes and the connector 3 of a PCI standard which connects, and the card device of non selection issue interruption, The non selection card interrupt control circuits 5, the card slot 2a which perform control which transmits this to the host CPU 4, A control signal is supplied to the bus selection circuit 11 and the non selection card interrupt control circuits 5 which choose one bus of the 2bs, The format conversion function for which serial parallel conversion etc. carry out the data from [from the bus selection circuit 11] the SDIO card outputted, The data outputted from the control logic 14 provided with I/O register control,

a host interface function, an interrupt control function, etc. and the control logic 14 is once held, and it has I/O register 15 accessed by the host CPU 4.

[0013]The non selection card interrupt control circuits 5, The output of AND circuits 51 and 52 and AND circuits 51 and 52. It flows through NOR circuit 57 and AND circuits 55 and 56 which take the NOR of the output of AND circuits 55 and 56 for carrying out the mask of the output of the flip-flops (F/F) 53 and 54 and the flip-flops (F/F) 53 and 54 to latch, and AND circuits 55 and 56, It has the interrupt mask circuit 58 which intercepts and carries out mask operation.

[0014]Next, operation of this embodiment is explained. First, if the card slot 2a of the SDIO host controller 1 and 2b are equipped with the SDIO cards (SDIO CARD) 103 and 104, If it detects having been equipped with the xsell signal by "0" at card slot 2b when it detected that the card slot 2a was equipped with the SDIO card 103, control logic 14 will be set to "1" and will be outputted to AND circuits 51 and 52. In order that it can come, simultaneously the bus selection circuit 11 of the SDIO host controller 1 may choose one of card slots, the host CPU 4 starts the service to the SDIO card with which the selected card slot is equipped. It is made not to detect detection of the interrupt signal of a slot with selected AND circuits 51 and 52 in a non selection card interrupt control circuit. Card interruption of a selection slot is processed by the control logic 14 as usual.

[0015]Here, card slot 2b shall be chosen by the bus selection circuit 11, and service to the SDIO card 104 shall be offered by the host CPU 4. When the SDIO card 104 is a memory device at that time, it passes along the bus selection circuit 11, and a format is changed by the control logic 14, and the data read from the SDIO card 104 is inputted into I/O register 15, and is held. The host CPU 4 accesses I/O register 15 via PCI bus 50 and the connector 3, and reads the data currently held.

[0016]In the above situations, the SDIO card 103 with which the card slot 2a of non selection was equipped In for example, the case as it has a bluetooth function and the communication start signal was received. That card interruption should be notified to the host CPU 4, d1 signal in a 4-bit data signal (d0-d3) is made into a low level ("0") by SD bus, and it outputs to AND circuit 52 of the non selection card interrupt control circuits 5.

[0017]Thereby, since the output of AND circuit 52 is set to high level ("1"), the flip-flop 54 latches this. "1" latched by the flip-flop 54 is inputted into AND circuit 56. Usually, since the interrupt mask circuit 58 has canceled the mask and it supplies high level (xmask "1") to AND circuits 55 and 56, AND circuit 56 is ****(ed), outputs "1", this boils NOR circuit 57, and is set more to a low level ("0"), and is outputted to the connector 3. Since this "0" signal is inputted into the host CPU 4 via the interrupt control logic in the control logic 14, the host CPU 4 can know that the SDIO card 103 issued interruption.

[0018]If the host CPU 4 gets to know this interruption, after clearing the flip-flop 54, Investigate the priority etc. of the card slot 2a set up beforehand and 2b, and for example, when the

priority of the card slot 2a is high, Via PCI bus 50, the connector 3, I/O register 15, and the control logic 14, the bus selection circuit 11 is controlled, a selection card slot is used as the card slot 2a, and the service to the SDIO card 103 is started by making a non selection card slot into card slot 2b. In this way, the host CPU 4 inputs the data which the SDIO card 103 received via the bus selection circuit 11, the control logic 14, I/O register 15, the connector 3, and PCI bus 50, and starts communication by the SDIO card 103.

[0019]Since these do not generate interruption, for example when the card slot 2a and the SDIO cards 103 and 104 with which 2b was equipped are memory devices, the interrupt mask circuit 58 is the purpose of preventing a misbelief item, A mask is carried out and it can avoid transmitting an interrupt signal to the host CPU 4 by outputting a low level (xmask "0") to AND circuits 55 and 56.

[0020]Or a low level (xmask "0") is outputted only to the AND circuit by the side of the SDIO card of a memory device, and it can avoid outputting an interrupt signal from the SDIO card of a memory device. Also when using the application which uses neither the fault degree hour of a power up, nor interruption, AND circuits 55 and 56 are intercepted by the interrupt mask circuit 58, and the mask of the interrupt signal is carried out.

[0021]According to this embodiment, the interrupt signal generated from the SDIO card 103 with which the card slot 2a of non selection was equipped can be transmitted to the host CPU 4 through the non selection card interrupt control circuits 5. Thereby, to the card slot 2a and all the SDIO cards 103 and 104 with which 2b was equipped, if the host CPU 4 has necessity, it can start service promptly and the response performance of a system can raise it.

[0022]Beforehand the time of predetermined conditions, for example, the state of excess at the time of a power turn, etc. by the interrupt mask circuit 58 The SDIO card 103. Or the application software which can carry out the mask of the detection of the interrupt signal from 104, and can lose malfunction, and does not use interruption can be used.

[0023]Drawing 2 is a block diagram showing the composition concerning a 2nd embodiment of the SDIO host controller of this invention. Although the composition of this example is the same as that of a 1st embodiment shown in drawing 1 almost, it is the point that the places which have a function which controls freely the level of the card slot 2a and the consumption power supply over the SDIO cards 103 and 104 with which 2b was equipped according to a situation differ.

[0024]In order to realize this function, a power supply is supplied to the SDIO cards 103 and 104. The power supply circuit 6, the SDIO card 103, or the interruption detection circuit 7 that detects the interrupt signal which 104 took out is formed.

[0025]Next, operation of this embodiment is explained. A power up and the host CPU 4 control the power supply circuit 6 via PCI bus 50, the connector 3, I/O register 15, and the control logic 14, supply the power supply of 3.3V of the normal mode to the SDIO cards 103 and 104, and

perform initial setting.

[0026]For example the host CPU 4 chooses card slot 2b, and it controls the power supply circuit 6, supplies the SDIO card 104 which had the power supply 3.3V of the normal mode chosen, and supplies the power supply of the standby mode of 1.5V to the SDIO card 103 of non selection.

[0027]Then, by the same operation as the embodiment shown in drawing 1, if the SDIO card 103 of non selection takes out an interrupt signal, since the output of AND circuit 56 becomes high-level, the interruption detection circuit 7 will detect that the SDIO card 103 issued interruption, and will tell the power supply circuit 6 about this. If it gets to know that the SDIO card 103 issued interruption, the power supply circuit 6 will supply the power supply 3.3V of the normal mode to the SDIO card 103, and will enable it to perform various operations.

[0028]According to this embodiment, when the power supply of only a standby mode which can take out an interrupt signal etc. is supplied to the SDIO card of non selection and an interrupt signal is taken out to this card, power-saving can be attained as the power supply of the normal mode is supplied promptly. There is effect that other operations are the same as that of a 1st embodiment shown in drawing 1 and same.

[0029]In the range which does not deviate from the gist without limiting this invention to the above-mentioned embodiment, In concrete composition, a function, an operation, and an effect, the same effect can be acquired with the application of this invention also in the electronic equipment which can carry out according to other various gestalten, for example, has three or more card slots.

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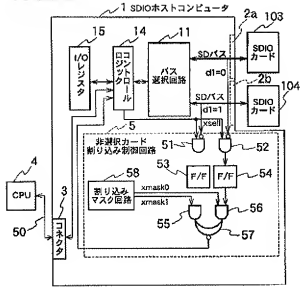
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a block diagram showing the composition concerning a 1st embodiment of the SDIO host controller of this invention.
[Drawing 2]It is a block diagram showing the composition concerning a 2nd embodiment of the SDIO host controller of this invention.
[Drawing 3]It is a block diagram showing the example of composition of the conventional SDIO host controller.
[Description of Notations]
1 SDIO host controller
2a and 2b Card slot
3 Connector
4 Host CPU
5 Non selection card interrupt control device
6 Power supply circuit
7 Interruption detection circuit
11 Bus selection circuit
14 Control logic
15 I/O register
51, 52, 55, 56 AND circuits
53 and 54 Flip-flop
57 NOR circuit
58 Interrupt mask circuit

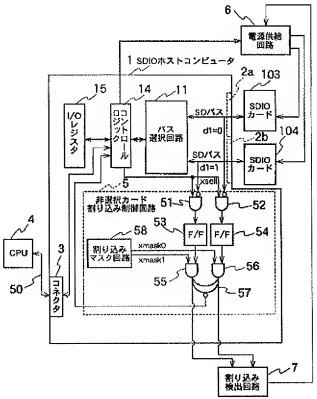
[Translation done.]

DRAWINGS

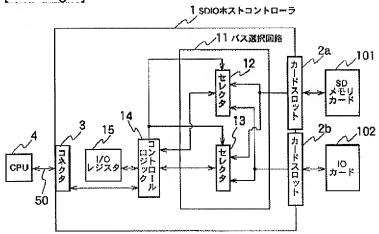
[Drawing 1]



[Drawing 2]



[Drawing 3]



[Translation done.]